

## METHOD FOR BUILDING SPACE-SPLITTING DECISION TREE

### **Abstract**

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5 A method is provided for data classification that achieves improved interpretability and accuracy while preserving the efficiency and scalability of univariate decision trees. To build a compact decision tree, the method searches for clusters in subspaces to enable multivariate splitting based on weighted distances to such a cluster. To classify an instance more accurately, the method performs a nearest neighbor (NN) search among the potential nearest leaf nodes of the instance. The similarity measure used in the NN search is based on Euclidean distances defined in different subspaces for different leaf nodes. Since instances are scored by their similarity to a certain class, this approach provides an effective means for target selection that is not supported well by conventional decision trees.

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FOR ESI 2016